UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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ART UNIT	PAPER NUMBER
2152	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _21 August 2006_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-11,13,14 and 27-29_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-11,13,14 and 27-29_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   The amendment filed 8/21/2006 has been placed of record in the file.

2.   Claims 1 and 27-29 have been amended.

3.   Claim 12 has been canceled.

4.   Claims 1-11, 13, 14, and 27-29 are now pending.

5.   The applicant's arguments with respect to claims 1-11, 13, 14, and 27-29 have been

considered but are moot in view of the following new grounds of rejection.

Continued Examination Under 37 CFR 1.114

6.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous office action has been withdrawn pursuant to 37

CFR 1.114. The applicant's submission filed on 5/26/2006 has been entered.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

8.   Claims 1-11, 13, 14, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Waclawsky et al. (U.S. Patent Number 5,974,457), hereinafter referred to as Waclawsky, in

view of Nuansri et al. ("An Application of Neural Network and Rule-Based System for Network

Management: Application Level Problems"), hereinafter referred to as Nuansri.

9.   Waclawsky disclosed a system for monitoring data traffic for a data communications

network that provides for the establishment and maintenance of a standard of operation. In an

analogous art, Nuansri disclosed a hybrid system that combines a neural network module with a

rule-based system for monitoring a communications network.

10.   Concerning claims 1 and 27-29, Waclawsky did not explicitly state determining possible

dependences between devices and services from the training activity parameters. Waclawsky's

system determines training activity parameters, analyzes them in different ways, and uses certain

properties to determine a normal range or standard of operation for the network. However, he is

not specific in terms of properties that relate devices and services to each other. However,

Nuansri does explicitly disclose identifying dependences among network services and the service

elements or devices as his system focuses on application level problems. It would have been

obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the

system of Waclawsky by adding the ability to determine possible dependences between devices

and services from the training activity parameters as provided by Nuansri. Here the combination

satisfies the need for a network monitoring system that can diagnose problems in more complex

domains by using more than only expert system techniques. See Nuansri, pg. 474, section 1.

This rationale also applies to those dependent claims utilizing the same combination.

11.   Concerning claims 1 and 27-29, Waclawsky did not explicitly state training a neural

network as the statistical estimator. Waclawsky's system trains a statistical estimator, but it is

rule-based instead of a neural network. However, training a neural network as a statistical

estimator was well known in the art as evidenced by Nuansri who system trains a neural network

as a statistical estimator to effectuate network monitoring and diagnosing. It would have been

obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the

system of Waclawsky by adding the ability to train a neural network as a statistical estimator as

provided by Nuansri. Again the combination satisfies the need for a network monitoring system

that can diagnose problems in more complex domains by using more than only expert system

techniques. See Nuansri, pg. 474, section 1. This rationale also applies to those dependent

claims utilizing the same combination.

12.   Some claims will be discussed together. Those claims which are essentially the same

except that they set forth the claimed invention as a device or a computer-readable storage

medium are rejected under the same rationale applied to the described claim.

13.   Thereby, the combination of Waclawsky and Nuansri discloses:

- <Claims 1, 27, 28, and 29>

    A method for computer-aided monitoring of a telecommunication network formed of

    devices capable of communication, said method comprising: determining training activity

    parameters, each describing activity of at least one of a corresponding device and a

    corresponding service (Waclawsky, column 4, lines 13-40); determining possible

    dependences between devices and services from the training activity parameters

    (Waclawsky, column 4, lines 13-40 and Nuansri, pg. 475, section 2); determining from

    the possible dependences a normal range of dependence for at least some of the devices

    and services in essentially undisturbed states to train a neural network as a statistical

    estimator (Waclawsky, column 4, line 60 through column 5, line 4 and Nuansri, pg. 478,

first paragraph); determining current activity parameters, each describing activity of at

least one of a corresponding device and a corresponding service (Waclawsky, column 4,

lines 55-58); comparing the current activity parameters by the statistical estimator with

the normal range of dependence (Waclawsky, column 5, lines 5-9); and determining from

said comparing whether at least one of the devices and services in the telecommunication

network has a communication performance different from the normal range of

dependence in accordance with a predetermined criterion (Waclawsky, column 7, lines

28-34 and column 8, lines 31-38).

- <Claim 2>

The method as claimed in claim 1, wherein at least some of the devices are constructed as

terminals capable of communication (Waclawsky, column 1, lines 17-33).

- <Claim 3>

The method as claimed in claim 1, wherein the training activity parameters are

determined within a predetermined time interval (Waclawsky, column 5, lines 59-64).

- <Claim 4>

The method as claimed in claim 1, wherein said determining of each training activity

parameter is performed by the corresponding device (Nuansri, pg. 478, section 5.1), and

wherein said method further comprises transmitting the training activity parameters to an

administration unit which performs said comparing and determining based on said

comparing (Waclawsky, column 4, lines 43-59).

- <Claim 5>

  The method as claimed in claim 1, wherein said determining of each training activity

  parameter is performed by a training activity parameter determining unit separate from

  the corresponding device (Waclawsky, column 1, lines 34-55).

- <Claim 6>

  The method as claimed in claim 1, further comprising determining communication-

  dependent dependences between at least some of the devices and services (Nuansri, pg.

  478, section 5.1).

- <Claim 7>

  The method as claimed in claim 1, further comprising determining possible directional

  dependences with regard to directions of communication between at least some of the

  devices and services (Waclawsky, column 2, lines 5-11).

- <Claim 8>

  The method as claimed in claim 1, further comprising determining data of at least some

  of the devices and services, and wherein said determining of the training activity

  parameters is based on the data (Waclawsky, column 4, lines 13-40).

- <Claim 9>

  The method as claimed in claim 1, wherein said determining of the training activity

  parameters uses all possible pairs of the devices and pairs of services (Nuansri, pg. 475

  second paragraph of section 3).

- **<Claim 10>**

  The method as claimed in claim 9, further comprising: storing the training activity

  parameters determined from the pairs of devices in a matrix; and determining the normal

  range of dependence from a structure of the matrix (Waclawsky, figure 4).

- **<Claim 11>**

  The method as claimed in claim 1, wherein at least one of the following parameters is

  determined as one of the training activity parameters data packets sent or received by the

  at least one of a corresponding device and a corresponding service, processor utilization

  of the corresponding device, a number of predetermined system function calls, and

  existence of at least one of predetermined processes and predetermined computer

  programs (Waclawsky, column 5, lines 37-48).

- **<Claim 13>**

  The method as claimed in claim 1, further comprising generating an alarm signal when at

  least one device in the telecommunication network differs from the normal range of

  dependence in accordance with the predetermined criterion (Waclawsky, column 7, line

  60 through column 8, line 6).

- **<Claim 14>**

  The method as claimed in claim 1, further comprising at least one of determining a

  disturbance of one of the devices in the telecommunication network; determining an

  unauthorized attempt to access one of the devices; and determining an unauthorized

  access attempt by one of the devices (Waclawsky, column 8, lines 31-38).

Since the combination of Waclawsky and Nuansri discloses all of the above limitations, claims 1-14 and 27-29 are rejected.

Response to Arguments

14.   From the applicant's remarks it appears as though the present invention utilizes only a neural network for all of the monitoring and analysis of the communications network. The current rejection of the claims is based on a hybrid system that utilizes a neural network as a statistical estimator, but that may also use a rule-based system or an expert system for further analysis and diagnosis of the network. If the present invention is indeed meant to utilize only a neural network, it is recommended that the applicant amend the claims to more clearly point out how the neural network is integral in each step of the monitoring and how the neural network actually functions at each phase in the process. For example, the applicant may consider adding to the independent claims some of the description set forth in paragraphs 82-94 of the specification. It is the examiner's opinion that adding appropriate language as to the use of the neural network or neuro-fuzzy model at each phase (training, application) and as to the use of the patterns/map structures would help in more distinctly claiming the present invention and would help in distinguishing the present invention over the prior art. This is only a suggestion as the patentability of these additional features has not yet been determined.

Conclusion

15.   The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure.

- Johnson (U.S. Patent Number 6,078,946) disclosed a method for provisioning resources

  in a network that determines the best path using neural network principles.

- Vinberg et al. (U.S. Patent Number 6,327,550) disclosed a method for monitoring and

  determining the state of networks that utilizes pattern recognition of common modes by

  neural networks.

- Hwang et al. ("PROMS: a PRO-active Monitoring System for SS7 Networks") disclosed

  a system that monitors messages of SS7 networks and provides diagnosis of errors based

  on fuzzy logic and neural networks.

16.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Victor Lesniewski whose telephone number is 571-272-3987.

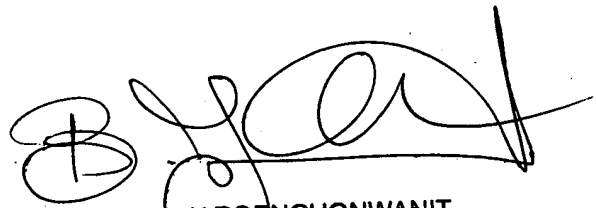The examiner can normally be reached on Monday through Thursday.

     If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Bunjob Jaroenchonwanit can be reached on 571-272-3913. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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